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THE INTELLIGENCE OF CHINESE CHILDREN IN SAN FRANCISCO
AND VICINITY

A Thesis
submitted to the
Department of Education and
the Committee on Graduate Study of
the Leland Stanford Junior University
in
Partial Fulfillment
of the Requirements
for the Degree of Master of Arts

By
Kwok Tsuen Yeung

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Approved for the department

Lewis M. Terman

Approved for Committee on Training for the

Edward C. Lankenau

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CHAPTER I
INTRODUCTION.

The intelligence of a people is expressed in its civilization. China has one of the most ancient civilizations in the world. As a people she has united to form a great empire dating back over four thousand years and with a written history of the same duration. China has developed a national literature not excelled by that of any other oriental people. Until the last decade China has possessed an absolute form of government recruiting its officials by competitive examinations from the ranks of her scholars.

Chinese culture is different from that of the West. The people have a distinctive spoken and written language, customs and habits; they are different in their emotions, in their taste in art and beauty, and in their beliefs and modes of worship. Thus it is difficult to make an absolutely true comparison of the intelligence of the two people--the white and yellow races, each with their own peculiar civilization.

Because of isolation for thousands of years, the Chinese were inclined, when the white people first touched their shores about one hundred years ago, to think that the new comers were a people of inferior type, and hence treated them badly and attempted their exclu-

sion. But more recently due to Chinese students studying in the Occident and due to the diffusion of western ideas through translated books, etc., the Chinese have begun to look upon the western civilization as equal to their own.

This evolution in viewpoint is equally true as regards the attitude of the Occidental toward the Chinese. Through actual contact with the Chinese, and by the spread of a fuller understanding of Chinese literature and civilization the Occidentals, at least the educated classes, are gradually coming to look upon the Chinese not as inferior but as equals. Sympathetic Western observers, who have been long in contact with Chinese¹ state, according to Dr. Monroe of Columbia University: "While there are differences between the Chinese people and the Occidentals in points of view, and in methods of approach, there is no fundamental differences in intellectual character, certainly, no inferiority. " Dr.² Pyle, after a fairly extensive mental testing of Cantonese children seems to think that the little inferiority the Chinese children showed in this test in comparison to the normal American children is to be explained not by inferior grade of intelligence but rather by the different environment, and difficulty of the

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1. Monroe, Paul: Introduction of Kuo's Chinese System of Public Education, p. XI - XII.
 2. Pyle, W. H. A Study of the Mental and Physical Characteristics of Chinese Children, School and Society, Aug. 31, 1918, Vol. p. 264 - 269.

Chinese language.

These two hypotheses may be regarded as generally accepted theory of the general intelligence of Chinese people. But the question of intelligence, however, is open to wide investigation with an efficient test, fair sampling and similar operation, in order to throw light upon this theory.

It is one of the main purposes of this study to reveal some truth regarding this theory. Since Chinese people are so greatly different from the Americans in customs and habits of living, language and expression of thought and feeling, an absolute comparison can hardly be derived, as it could, if applied to a case with similar environment and similar social and economic conditions.

In order to obtain a fair sampling pains have been taken to select for this experiment those children who were born in America who were subjected more or less to the same or similar environment and were receiving the same media of instruction as the American children. But even with this the writer does not claim to be able to obtain a real basis of comparison, for the Chinese, living in San Francisco and vicinity, retain most of the Chinese customs, and social and economic conditions. These Chinese are not much different from those Chinese living in the father land, - for they talk their own language, worship their native Gods, and retain their old social

customs.

Other purposes of this study are:

1. To find out the general intelligence of the Chinese people in San Francisco as revealed by the Stanford Revision of Binet-Simon Scale.
2. To study the relative intelligence of the Chinese boys and girls.
3. To find out the most striking peculiarities of function, if any, between the two races.

Since such an experiment covers only a small portion of Chinese in America, and these Chinese have come mostly from the districts around the city of Canton, it will serve only to give some idea of the general intelligence of the Chinese people as a whole. More extensive study is needed, and it is hoped that this study may serve as a help to later workers.

The writer is indebted to Dr. Terman for suggestions and assistance. Much credit also is due to Mrs. C. C. Newhall - the principal of the Oriental school at San Francisco, and to her staff who so kindly cooperated in making this study possible.

CHAPTER II.

NATURE OF INTELLIGENCE AND MENTAL TESTING.

Before any study or research of a subject can be made effectively, a thorough understanding of the terms applied is inevitably necessary. Intelligence, an invisible and intangible trait, which reveals itself in so many phases of human activity, has not been yet clearly defined. Many of the definitions given to it have been vague and incomprehensive. Some of them are one-sided; others are too general.

For instance, according to Ebbinghaus, the essence of intelligence lies in comprehending in a unitary, meaningful whole, impressions and associations which are more or less independent, heterogeneous, or even partly contradictory. Intellectual ability consists in the elaboration of a whole into its worth and meaning by means of many sided combination, correction, and completion of numerous kindred associations. It is a combinative activity. Meumann offers a two fold definition; Intelligence depends on (1) Capacity for independent and productive thought, and (2) The intensity of the whole mental life. Burt defines intelligence as the readjustments to novel situations by organization of new psycho-physical co-ordinations. Spearman and Hart define intelligence as the common factor entering all mental activities; According to Stern intelligence is the general capacity of an individual consciously to adjust

his thinking to new requirements. Binet says the fundamental faculty in intelligence is that of adapting one's self to circumstances. The conceptions, which he emphasized, are the three characteristics of thought processes. (1) Its tendency to take and maintain a definite direction. (2) The capacity to make adaptation for the purpose of attaining a desired end, and (3) The power of auto-criticism.

These definitions in turn are not comparable, because they are not given in exactly defined words of universally accepted meaning. Each of these definitions emphasizes only the function of one side of intelligence, differing, however, mainly in point of view or in location of the emphasis. Among them Binet's and Stern's definitions seem to be more comprehensive, and broad enough to include the more important elements, hence they are commonly and widely accepted by modern psychologists.

Although Stern's definition, is quite comprehensive, yet it admits constructive criticism. Stern says intelligence is a general capacity of an individual consciously to adapt his thinking to adjust himself to the new requirement. This definition in one respect is too broad. If intelligence, thus includes all mental adaptation to environment it will include instructive adaptation and also those acquired through experience, both of which require no or little intelligence. Another fault, as pointed out by Meumann would reverse Stern's procedure by first finding out what is demanded of in-

telligence and then analyzing the mental functions which meet that demand. This is, according to Dr. Terman's opinion, the only method of approach which will bring one any nearer to psychological solution of the intelligence problem. It is only on this distinction that the relative intelligence lies, and the degree of brightness of an individual is determined. For there is not much difference in a sensorimotor adjustment between a genius and a moron. A moron can do things just as well, so far as sensorimotor skill is concerned. But as to memorizing of non-sense syllables, the genius will remember them better, and also in abstract thinking the genius will be far superior.

The difference, therefore, between an intellectual genius and a moron lies in the fact that the genius can form conception, relate them in diverse ways, and grasp their significance. Dr. Terman says. "An individual is intelligent in proportion as he is able to carry on abstract thinking." Again, Thorndike says: Intellect, in general, can be defined as "The power of good response from the point of view of truth or fact." It may separate itself according as the situation is taken in gross or abstractly, and also according as it is experienced directly or thought of. The power of good responses to abstract qualities and relations rather than to gross total facts, and to ideas rather to direct experiences, according to Thorndike, may be called the more

1. Terman, L. M. and Thorndike: Intelligence and its measurement. A Symposium, J. Edw. Psy. March 1, 1921 p. 23-147.

intellectual variety of intellect.

It was this ability to carry on abstract thinking that marked such men as Aristotle or Confucius from the average of their people, and caused them to be regarded a geniuses. It is the ability to think in abstract terms that separates the superior races from the inferior races, and enables the former to obtain the mastery. The superiority, therefore of a person or race, depends upon the ability to think abstractly.

Abstract thinking, generally, involves the synthetic and analytical activities of the mind, the use of reasoning, judgment, and the like. Our tests, therefore, for the purpose of discriminating the level of intelligence should include tests involving these foregoing mentioned activities.

Before the work of Binet, psychologists had been mainly concerned with tests of the simple processes, and their work had not resulted in any thing very practical from the standpoint of the clinical psychologests or educators. But from the time of Binet the emphasis has been laid upon judgment and reasoning, and on doing so mental testing has turned from simple to complex processes of thought.

All mental tests, individual or group, now in use, are combinations or several tests which involve complex thought processes. Among the group tests there are National Intelligence Scale, A and B, Terman's Men-

tal Group test for grades 7 to 12, and Thorndike's Intelligence Examination for high school graduates, etc. The reliable individual tests are the original Binet-Simon scale, Gaddard Revision and Stanford Revision and Extension of Binet. This revision, which is the Standard in United States, consists in the elimination of some of the original tests, in the addition of a considerable number of new ones, in the readjustment of others, up or down the scale of years according to their difficulty, and particularly in the development of a more precise technique for giving and evaluating the tests, so that examiners may be guided specifically in the administration of them. It is with this scale that the present experiment is made, and because this test is the standard in America, a comparison with the American children is possible.

Before the description of this experiment it will be profitable to discuss Briefly the question of the present attitude toward racial mental differences viewed by the authorities on the subject, in order to obtain a wider view of the problem.

CHAPTER III.

RACIAL MENTAL DIFFERENCES.

Many studies have been made on the racial problem in the recent years. The question of racial mental differences is yet a disputed one, for among the races there is found a wide difference in the general level of mentality, although even among the most primitive tribes, men of high mental ability are found. Some, therefore, incline to think that there is no marked distinction in mental capacity among the races. Others believe that mental differences among races are as great as are those in physical traits. The former advocate that the human organization of the mind is practically identical among all races; that the same laws govern all mental activity, the manifestation of which depends upon the character of the individual experiences which are subjected to the action of those same laws. The differences in culture is to be explained in terms of the physical geography or the stimuli from other groups.

Boas and others, for example, believe that the general organization of mind is much the same in all races of mankind, and that the relative intelligence and advancement of a social group depend on the object to which they give attention.¹

1. Boas, Franz: The Primitive Mind. Smithsonian Report, 1901 p. 451 - 460.

Thomas, furthermore, assumes that the main factor responsible for the differences in mental and social attainment found in different peoples is expressible in terms of internal stimulation, imitation, opportunity, occupational differentiation due to tradition, geographical limitations and mental attitude in general.¹

These hypotheses and explanations are sound and logical, but they have not been proved experimentally. Those that have been proved by psychological tests have shown negative results. The negroes, living in America, having the same environment and geographical conditions, possessing the same language with similar social and economic conditions are shown by the use of mental tests to be much lower in mental ability than are the white Americans. This shows that the mental differences have not been due mainly to geographical conditions or social environment but that something else must be taken into consideration, that is, the heritage of mental capacity.

Baldwin, tested 37 white and 30 colored delinquent girls ranging in age from 13 to 21 years, inmates of a Pennsylvania Reformatory. Their mental capacity as tested by a substitution test gave the average result that the negro girl's did 62.4 percent as well as the whites in a given time, and made 245.3 percent

1. Thomas, W. I. : Race Psychology. Amer. Journal of Sociology. 1921. Vol. 17. p. 725-775.

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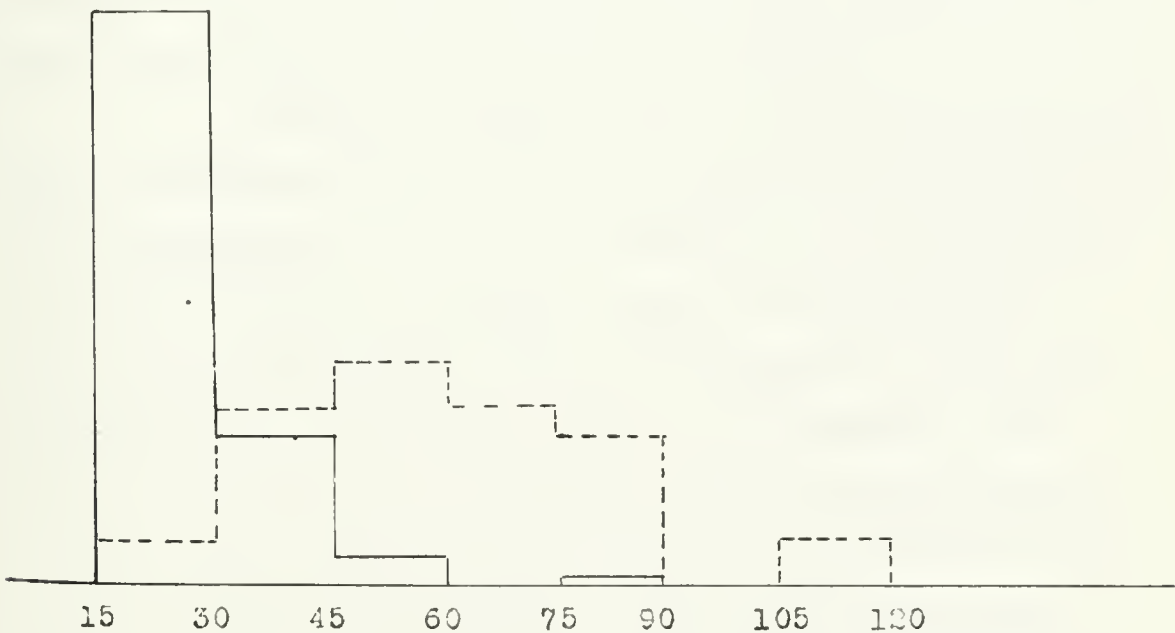
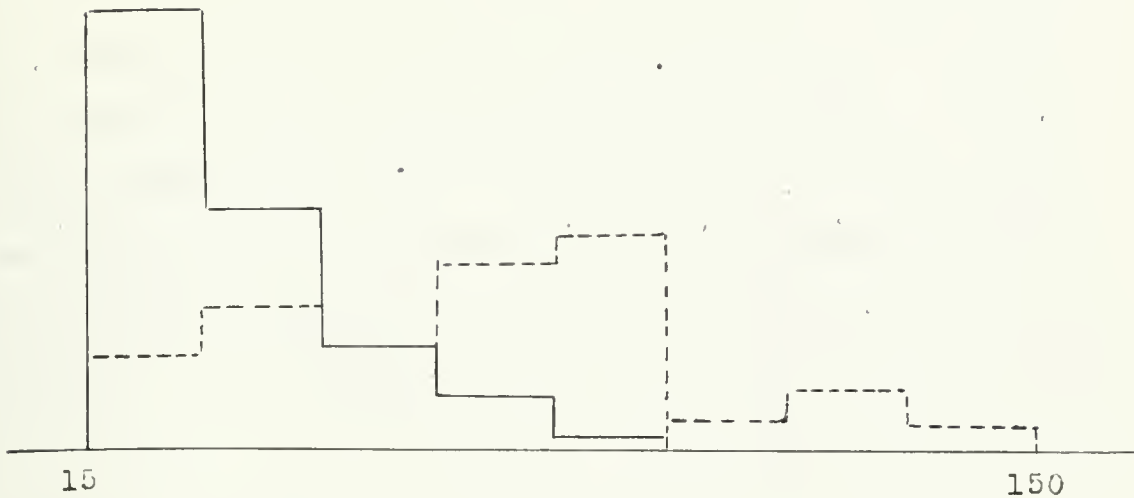
Strong, using Binet-Simon Scales, tested 120 negro and 250 white children in the schools of Columbus, South Colorado. To this author, racial differences were purely an incidental consideration, so that these differences were not worked out adequately to any elaborated results. The results he did obtain, however, are very suggestive: 60.8% of the colored and 25.2% of the white are rated below age in mental development, 30% of negro and 42.9% of white are at age, and 9.2% negro and 26.2% white are above age.

Mayo tested 150 negroes and an equal number of whites under similar social and economic conditions and subjected to identical school conditions and methods of instruction. The median school marks of the whites in all their subjects was 66, and for the colored it was 62, and only 29% of the colored reach the median mark for the whites. The average for the white is 7: for colored is 6.5.

The difference between whites and negritos, according to Professor Woodworth, is shown graphically on the following page. The chart shows placing of blocks in the first and third trial. In the first trial only 9½ percent of the negritos were as quick as the median white; in the third trial no one of them was as quick,

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1. Baldwin, B. T. The Learning of Delinquent Adolescent Girls as shown by a school test, J. of Educa. Psycho. 1913, V. 4 p. 317-33.
 2. Strong, A. M. - 350 White and colored Children measured by B. S. Scale. Peo. Sem. 1913, 20.
 3. Mayo, M. J. - Mental Capacity of Amer. Negro, Archive of Psy. 1913. V. 28, p. 70.

GRAPH I COMPARISON OF AMERICANS WITH
NEGritos IN PLACING BLOCKS.



Upper diagram: Comparison of whites (continued lines) and negritos (dotted lines) in respect to time taken to put variously shaped blocks in holes to match. The horizontal scale in seconds, first trial.

Lower diagram: Same as the upper diagram except that the records in the third trial were used.

the best individual of the twenty-one just failed to reach the speed of the median white.

Judging from these experiments it is evident that there are marked mental differences existing among the two races, in spite of their similar social and economic conditions and environment. The differences must be accounted for, therefore, by their original endowment. Intelligence, in other words, is due to inheritance. Dr. Humphrey says ¹ "One's mental inheritance is a fixed quantity; environmental limitations may be overcome. Environment may change one's facial expression, one's way of living, manners and habits, but it does not shape those features which are a sure index of inherent mental capacity."²

Another experiment may be mentioned which shows quite conspicuously the heritage of mental ability; that is, the one carried on by Dr. J. W. Creighton, and directed by Dr. Pyle in the city of Canton, China, using the same kind of tests that were used for the Americans. He tested 500 children of the ages from ten to eighteen. The results were found to be quite as good as those obtained for the whites. The children, however, were raised in an entirely different environment, with entirely different language, customs, habits, etc. The tests used for this experiment were the rote memory, logical memory, substitution analogies, and the spot pattern tests.

2. Humphrey, S. K. - The racial prospect, Charles, Scribner's Sons, 1920. p. 21 - 33.

The object of the rote memory test is to determine the immediate memory span for short and unrelated words. This was determined separately for abstract and for concrete words. The purpose of the logical memory test is to determine the immediate memory efficiency for logical material; that is, ideas as related in connected discourse. A short selection was read and the test was scored by the numbers of correct ideas that were reproduced. The object of the substitution test is to determine quickness of learning. The test consisted of two parts. (1) Transcribing digits into arbitrary symbols. (2) Transcribing arbitrary symbols into digits. Efficiency in this test is determined by speed of performance. The object of the analogies test is to determine efficiency in performances in which logical relationships are the important factors. The last is the spot pattern test which measures ability to perceive spatial relationship and to reproduce them from memory.

Because all these tests were translated into the Chinese language it is an open question as to the comparability of these results with those attained by American school children. As will be seen in an examination of the table it is only in rote memory that the Chinese Children equal or surpass the scores of American Children.

The tests of logical memory, analogies and substitution would probably rate highest in present day

practice as measures of intelligence whether or not they have formed a fair basis of comparison is not easy to determine. It is certain that they do not form an exact basis of comparison. Because of the extraneous factors due to language differences, it is the opinion of the author that the Chinese given the mental tests would not have been much, if any, inferior in the performance of the tests to the Americans with whom they were compared if they had been subjected all their lives to the same or similar influences.

The norms for American children used are those for city children. In an unpublished study of all rural school children of a Missouri county, Pyle found the mental development of the rural school children as measured by these same tests of his to be as much below that of city children as the difference in norms found in his study of Chinese and American children. Using the norms found for American children as a standard of comparison or 100%, Chinese boys and girls stand to each other as 93 to 83 in the physical measurement made, 88 to 77 in the mental test ration. These two rations are very nearly the same. The mental test ration of the American negro boy and girl, though having the same or similar environment as the whites, is 64.6 to 67.8, using the norm of American children as a standard.

It is interesting, therefore, to note that while negro boys and girls have much the same environment, opportunity, courses of study, etc., as have the whites, they are far lower in comparison to the whites than are

TABLE I.

TABLE I. MENTAL MEASUREMENTS OF CHINESE

Age	Sex	12	13	14	15	16	17	Av.
Digit Memory	B.	125.	118.	122	116.	112	109	117
	G.	122.	114.	103	102.	97	112	108
Verbal Mem.	B.	82.	77.	85.	89.	90	99	97
	G.	97.	96.	89.	93.	94	95	94
Imitation	B.	91.	85.	93.	81.	83	96	88
	G.	85.	83.	75.	77.	66	79	78
Analogues	B.	23.	33.	42.	39.	40	37	36
	G.	21.	41.	26.	24.	19	27	27
Dot Pattern	B	116.	100.	80.	65	98	82	90
<hr/>								
Average	B.	87.	82	84.	78	86	85	
	G.	82.	84.	73.	74	69	78	
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Wyle's data from tests made in Canton.

Wyle, W. H. - A study of the Mental and Physical Characteristics of Chinese -- "School and Society. Aug. 31, 1918. Vol. 8 p. 264-269

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the Chinese. This shows that the intelligence of a human race depends upon inheritance rather than environment. The general interpretation of mental heredity, according to Daniel Starch,¹ is that providing everything is equal the ultimate achievement of any given individual is due to his original ability probably to the extent of 60%, and to actual differences in opportunity or external circumstances only to the extent of 10 to 40%.

Although mental heredity is so important a factor in one's achievement, it is however, concerned only with those activities which require the higher thought processes. But in the case of the sensory and sensorimotor traits, heredity plays only a slight or no part. Hence the differences of individuals or races in these traits are extremely small.

1. Starch, Daniel - Educational Psychology, 1920. p.94.

CHAPTER IV.

DESCRIPTION OF THE TESTS AND METHODS APPLIED.

For making this experiment the Stanford Revision of The Binet-Simon Scale was employed. The method of administration of this test followed the instructions given in Dr. Terman's "The Measurement of Intelligence." No change in the tests and interpretations was made, save the omission of the vocabulary test in each age. For the vocabulary test is a measure of one's mastery of words in a native tongue; it is, therefore, not fair to apply such a test to foreigners. Because the vocabulary test was omitted, the weighing^{of} the rest of the tests for each year was revised giving 2.4 months to each test in years having six tests, and 3.4 months for each test for the years having eight tests.

The seven point scale for teacher's ratings of pupil's ability and of school work was used to check the accuracy of the intelligence quotient obtained by the tests. Teacher's estimates, especially school marks, have been subjected for discussion for several years. The reliability of these ratings may be yet questioned. The ordinary reliability of a teacher's estimate probably has a coefficient of .4 or .5. The coefficients, for instance, obtained by Dr. Terman for intelligences were .48, and for school work, .42 for the school children in the vicinity of Stanford. For New York City schools the reliability coefficients were for intelligence; .58, and for school work .61. These coefficients are the results of a repeated estimate by individual teachers. It

thus be seen that not very much weight can be given

no single estimate such as these obtained in this investigation, for these estimates cannot be corrected as there is only one measure here for each individual. At least two estimates are necessary to obtain a reliability coefficient.

Each of the teachers, none of whom possessed information as to the scores obtained in the tests, was given cards upon which to rate her pupils. These cards had spaces for recording names, ability and school work. The teachers then were asked to give the ability of the individual pupil as compared with those of the same age, and his school work as compared with the entire class. A copy of the instructions given to the teachers may be found in the appendix.

Pearson's formula for correlation was employed to find the relationship existing between the intelligence quotient obtained in the test and the ratings of the teachers; $r = \frac{\sum xy}{\sqrt{\sum x^2 \cdot \sum y^2}}$ The value in this calculation can be positive or negative. If the correlation between two traits were perfect and positive, the value of r would be 1. If the correlation between the two traits were perfect and negative, the value of r would be -1. Again if there should be no correspondence in the position of the measures in the two series, the value of r would then be 0. Thus the value of r may range from -1 to 1. It can either fall between 0 and 1 or 0 and -1 depending whether the correlation is to be spoken of as "High" or "low."

The variability between one ability and another is determined by Pearson's coefficient of variations. This formula is, $V = \frac{100 P}{M}$, and the ratio of girls to boys in variation is obtained by the formula $\frac{V_g}{V_b}$. Complete directions for applying Pearson's formula are given in Lugg's Statistical Method Applied to Education: hence further description here is unnecessary.

CHAPTER V.

DATA AND RESULTS

This investigation was made by the writer during the spring of 1921 with the intention of making a comparative study of the intelligence of the Chinese children in America and that of the native children.

In order to obtain a fair comparison and good sampling, pains were taken to secure from the subjects the true data as to age, native birth place, environment, instruction received, and occupation of their parents.

Before proceeding to a discussion of the data and results it may be profitable to give a description of the general nature of the subjects in this experiment.

A total of 109 Chinese Children of the ages - 14, who were born in America were tested with the Stanford Revision and Extension of the Binet-Simon Scale. In order to get an unselected group of children all those of the ages of 9.0 - 10.0, and of 12.0 - 13.0 who were born in San Francisco and vicinity were tested. The number of each age was distributed thus: 49 were 9-10 years old, 33 were 12 - 13 years old, and the remaining 27 were of various ages from 5 - 14. This distribution was expected to represent the entire child population in the Chinese community in the city of San Francisco.

A great part of the parents of the children were of the laboring and farming class, mostly immigrants from the districts around the city of Canton. Most of

These parents had not had a thorough education in Chinese culture before they came to America. They, therefore, may constitute the average village class of the Chinese people.

Their present environment and social and economic conditions resemble more those of the Chinese rather than those of the native. The Chinese native tongue, customs and habits of living, beliefs and manners of worship are all retained. They all are living together in their own exclusive settlement. The children, however, master the English language quite readily, and receive the same kind of instruction, curriculum and treatment as the whites, although all Chinese children in San Francisco are segregated in a school exclusively for Chinese.

TABLE II.
DISTRIBUTION OF I.Q. OF 109 UN-
SELECTED CHINESE CHILDREN OF
5-14 YEARS OLD.

I.Q.	FREQUENCY	PERCENT
66 - 75	5	4.6
76 - 85	20	18.3
86 - 95	26	23.8
96 -105	38	34.8
106 -115	13	12.3
116 -125	3	2.8
126 -135	3	2.8
136 -145	1	.8
TOTAL	109	100.0
MEDIAN	97	

The data of this experiment were carefully tabulated and classified into six main parts for study, with comparisons and conclusions made in each part. The first part is to give a general description of the intelligence of the Chinese Children; the second, a comparison of the teacher's ratings of ability and school work with intelligence as measured by the test; the third, the relation of grade progress to intelligence quotient; the fourth, the influence of social status on intelligence; the fifth, a comparison of sex differences in intelligence; and the last, a comparative study of the intelligence of the two ages.

1. Table II shows the general intelligence of the Chinese children studied in this experiment in terms of intelligence quotient, which was obtained by dividing the mental age by chronological age. The Chinese custom of counting age is by units of a year. For instance, a child born in the last week of 1907 would, by Chinese counting, be 2 years old on New Years Day of 1908, 3 years at the start of 1909 etc. Thus the entire population of China increases its age by one year the first of each New year. Thus an element was introduced which results often in confusion when one endeavors to obtain an accurate measure of the intelligence quotient therefore, care has been taken by the tester to reduce all ages to the American method of figuring age. This was done by obtaining from the subjects, or more often from the school records and

parents, the exact day, month, and year of the subjects birth.

A study of the table will reveal the fact that the intelligence quotient ranged from 66 to 145. The majority of the cases fell between 95-150 which was regarded as average intelligence. They were distributed as follows; 34.8% of the cases crowded at 96-105; 46% below 95; and 18.4% above 106. The median is 97. The mental ages ranged from 5 to 17.6, but centered mostly at 9 and 12.

In 905 unselected cases of American children having the same range of Chronological ages, the distribution of the intelligence quotients was as follows: 33.9% at 96 - 105, 31.2% below 95, and 34.9% at above 106. The median is at 99. Thus the rates of the two medians (Chinese 97, American at 99) is 97:99, which is practically equal to 1. A detailed comparison of these groups is shown on table III.

When the results were arranged in a Gaussian Curve, as shown in graph II, it showed that the Americans were better distributed making the curve more symmetrical on both sides, while the curve for Chinese is skewed.

The graph shows also that the Chinese are higher on the central column containing I. O. 98 - 105. This shows that the Chinese may have more persons of average intelligence, it may show that the Chinese

TABLE III.
COMPARISON OF I.Q. OF CHINESE
WITH AMERICAN CHILDREN IN EACH
GROUP.

Races	<u>INTELLIGENCE QUOTIENT</u>									
	56	66	76	86	96	106	116	126	136	
	65	75	85	95	105	125	125	135	145	Md.
Chinese	.0	4.6	18.3	23.8	34.8	12.3	2.8	2.8	.80	97
American.	33	25	8.6	20.1	33.9	23.1	9.0	2.3	.55	99

*Data from Terman's Stanford Revision p. 40 Graph 14.

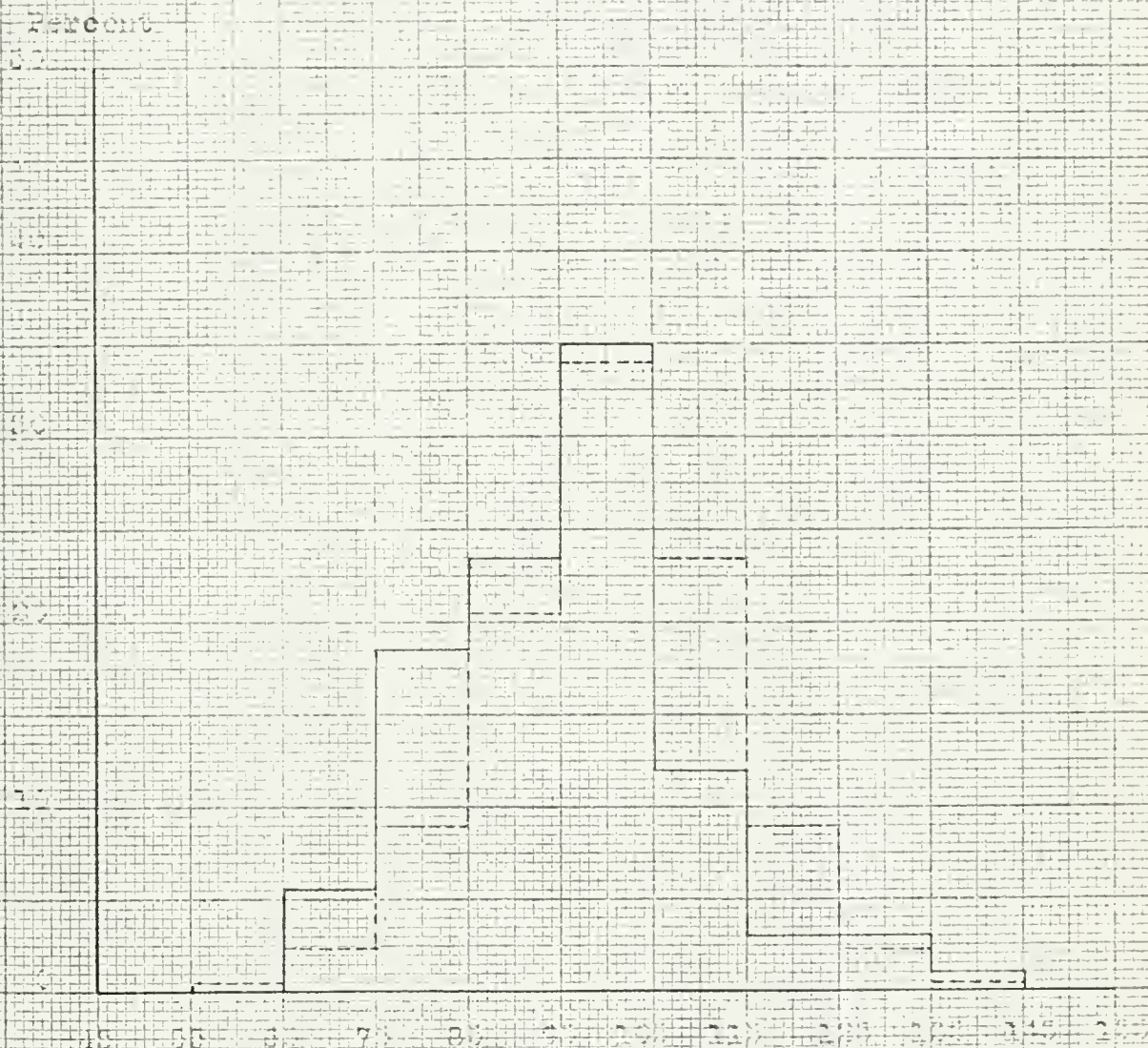
as a race are more uniform, because in the test of these Chinese students two of the very extremes are not show.

Since the two medians are so much alike, there being only a difference of two points, the writer inclines to think that the difference therein was not due to distinction in original endowment, but may be accounted for by the lack of perfect mastery of the language. For, a close examination of those falling below I. Q. shows that 85 who were all located in low grades showed during the time of testing difficulty in answering questions requiring the knowledge of English. The cause of being in the low grades may be a late start in going to school, and hence a belated attempt at the mastery of the English language, while those possessing an I. Q. 106 and above were mostly located in high grades.

Again, if the intelligence quotients be rearranged and grouped by intervals of 10 - 19, 20 - 29, etc, and plotted, this distribution of intelligence quotients is more balanced. Thus it shows that the Chinese children tested are normal in mental growth. In this grouping 55% are found to fall between which is regarded as normal 90 - 110. The curve of this distribution is shown in graph III.

When the median is compared with that of other nationalities besides Americans, it is found that

GRAPH II. COMPARISON OF INTELLIGENCE QUOTIENT OF CHINESE
AND AMERICAN CHILDREN OF 5-14 YEAR-OLD.



INTELLIGENCE QUOTIENT

(Continued line for Chinese; broken line for American.)

GRAPH III. DISTRIBUTION OF INTELLIGENCE QUOTIENT OF 109

UNSELECTED CHINESE CHILDREN OF THE AGES OF 5-14.

Number

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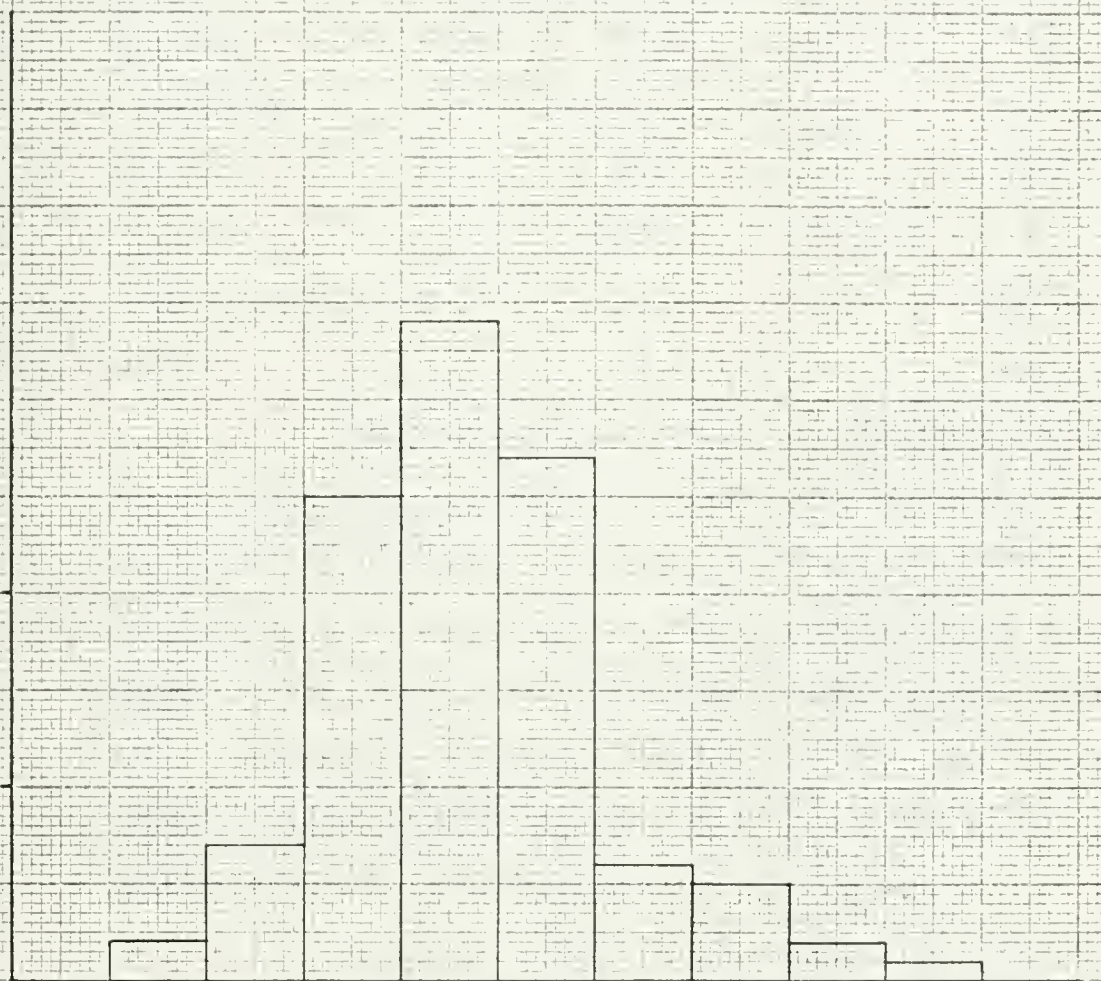
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60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135 140 145 150 155

INTELLIGENCE QUOTIENT



the median of the Chinese children tested is nearer to that of the northern Europeans and Americans than to that of the children of Spain, Portugal and Italy. Such a comparison is shown on the following table:

Race	Number of Cases	Median I. Q.
Spanish	37	78
Portugues	23	84
Italian	25	84
Chinese	109	97
Northern European	14	105
America	49	106

The above data, with the one exception of the Chinese, were obtained from the testing of kindergarten children who, as stated by Dr. Terman, usually show a higher score than do children of more mature age. Hence these Chinese children would compare even more favorable with the children of several nationalities if not compared with children of kindergarten age, but with children of their own age.

II. In order to ascertain the reliability of the intelligence quotient obtained from mental test, teachers were asked to rate the ability and school work of the subjects on seven - point scale

* Data from Terman L. M. --Intelligence of School children p. 56.

This scale was suggested by Dr. Terman: the reason for using it instead of the five point scale is that by having a greater number of possible ratings there would be a better chance for a finer distribution.

The scale is given as follows.

1. Very superior.
2. Superior
3. Above average
4. Average
5. Low average
6. Inferior
7. Very inferior.

The ratings thus obtained are compared with the intelligence quotient and are shown in the accompanying charts. Chart I. shows the relation of teacher's estimates of ability and intelligence quotient. These were rated by the grade teachers (who have been with the pupils at least half a year) by comparing the pupil with the average child of same age. A study of the chart will show that the ratings distributed quite well. In a general way those who were rated high by the teachers did better in the tests. By the use of Pearson's formulas a correlation of ,52 with P E .048 was obtained for the teacher's estimation of ability and intelligence quotient. This was about the normal correlation that could be obtained by testers.

CHART II.

RELATION OF TEACHERS ESTIMATES OF ABILITY
WITH INTELLIGENCE QUOTIENT

	60 69	70 79	80 89	90 99	100 109	128 129	110 119	130 139	140 149	Total	Md.
1.					1	1	1	1	1	5	125
2.			1	4	5	3				13	103
3.		1	4	11	8		1	1		26	97.3
4.	1		5	7	4					17	93.6
5.	1	3	7	1	1					13	83.6
6.			2	1	1		1			5	95.0
7.											
Total.	2	4	19	24	20	4	3	2	1	79	

($r = .52$: $P E = .048$)

CHART II.

RELATION OF TEACHERS ESTIMATES OF SCHOOL WORK
WITH INTELLIGENCE QUOTIENT.

	60 69	70 79	80 89	90 99	100 109	128 129	110 119	130 139	140 149	Total	Md.
1.							1	1	1	3	135
2.			1	6	5	2		1		15	101
3.		1	6	5	10	1				23	99
4.		1	6	9	1	1				18	92.3
5.	1	1	3	3	1		1			10	90.
6.	1	1	2	1	3					8	89.
7.			2	1						3	88.5
Total.	2	4	20	25	20	4	2	2	1	79	

Pearson's Correlation = .46 ; $P E, .060$

Chart II shows the distribution of teacher's estimates of school work with intelligence quotient. Examining it one will notice that the estimates of school work also correspond closely with intelligence quotient. A correlation of .4% and P E .060 was calculated by Pearson's formulas. These two correlations show high reliability for they both possess small P. E.

The medians of the two ratings as shown on tables V and III show close correspondance between the first five rankings with each other, but not so with the last two rankings. The reason these last two do not show good agreement may be due to the fact that when a subject possesses a very limited language capacity he is unable to do his school work successfully, and therefore unable to give much indication of his mental ability. Thus there were possibly some errors made in the estimate of ability at this end of the scale. Another reason may be that the teachers' rating of ability depends on or may be influenced by the personality of the pupils. Exceptional industry, earnestness to learn, and obedience may thus affect the score.

There are still other possible reason's

1. The school children may be working below the limit of ability, because of the factor of unsuitability of the school curriculum, and thus be-

TABLE V
TEACHER'S RATING OF ABILITY
AND MEDIAN I.Q.

Ratings of Ability	Median I.Q.
	125
1	103
2	97.3
3	93.6
4	83.6
5	95.0
6	
7	--

TABLE IV.
TEACHER'S RATING OF SCHOOL WORK
AND MEDIAN I.Q.

Ratings of Work	Median I. Q.
1	135
2	101
3	99
4	92.3
5	90.0
6	89.0
7	88.5

coming lazy and indifferent to the work. This may affect their standing with the teachers.

2. A sudden improvement of school work in the grade may affect the teachers estimate.

3. Sickness, irregular attendance and change of schools will be other causes.

For these causes a disagreement would naturally be found in the relation of teacher's estimates and intelligence quotient.

III. The school grade of the subjects ranged from 1st grade through the eighth grade; the chronological ages from 5 to 14; and mental ages from 5 to 17. Since most of the subjects tested were chronologically 9 - 10 and 12 - 13 years old, most of them were in the second, third, and fifth grades.

For the purpose of studying in detail the correlation of the chronological age of the subjects with the grade progress, and the mental development in each grade, the following charts were prepared. Charts III shows the age-grade distribution of the 109 unselected Chinese children. The vertical column at the extreme left denotes the grades of the subjects and the top horizontal row tells the chronological ages. An examination of the chart will show the fact that most of the ages of the subjects are one or two years more than the proper standard age for American children. The American standard ages for each grade are marked off by means

CHART III.
AGE * GRADE DISTRIBUTION
OF THE 109 CHINESE CHILDREN.

(r .84; PE .028)

Grade.	5	6	7	8	9	10	11	12	13	14	Total
8								2	3		4
7							1	4	1		6
6							1	5			6
5						1		13	1		15
4					5	1		6			12
3			1	2	11			2			16
2	1		2	3	28	2	1	1			38
1		1	5	1	5						12

CHART III
 AGE - GRADE DISTRIBUTION
 OF THE 100 QUIET CHILDREN

Grade	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1																														
2																														
3																														
4																														
5																														
6																														
7																														
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30																														

of a double square in each grade. For instance, the proper ages for the 1st grade are 6 and 7, for the 2nd grade 7 and 8, etc. Taking this as basis, 25.0% of the Chinese children are found to be normal, and 38.5% are retarded 1 year, 12.8% 2 years and 16.5% are accelerated 1 year, 3.6% 2 years etc. It is evident that the number of retarded Chinese children is greater than the number of those accelerated (see table VIII). With a comparison of the American children, the Chinese children are found to be 13.3% more in the retarded group, 19.3% less in the normal group, but in the accelerated group the Chinese are 5.2% more than the American. Either the Chinese children began to study one year later, or they have been retarded in mental growth. Upon inquiry the writer found that most of them began schooling one year later than the American Children. Some of them moreover have been retarded on account of inefficiency in understanding the English language.

Whether or not the mental development of the subjects is retarded is shown on the mental age and grade progress chart which is given on the following page. Chart IV. A study of this chart reveals a much better distribution, the majority of the subjects being located in the proper grade for their mental age. Application of the Pearson formula gives a correlation of .88 with P E of .015, which shows a very high relationship be-

CHART IV.

RELATION OF MENTAL AGE AND GRADE PROGRESS.

(D .88; P.E. .015)

Gr.	5	6	7	8	9	10	11	12	13	14	15	16	17	Tot.	Med.
8									1			3	1	5	16.7
7									2	5				7	14.4
6					1			4						6	12.6
5					3	3	4	4	1			1		15	11.5
4				1	6	2	1							10	9.8
3				2	13	2								17	9.6
2		2	7	17	12									37	8.7
1	1	2	7	2										12	7.5
Tot.	1	3	14	22	35	7	5	8	4	5	0	4	1	109	

TABLE 1. - SUMMARY OF DATA FOR THE 1960-1961 FLOODING OF THE MISSISSIPPI RIVER AT ST. LOUIS, MO.									
DATE	TIME	WATER SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL)	WATER SURFACE AREA (ACRES)	WATER SURFACE VOLUME (CUBIC FEET)	WATER SURFACE VELOCITY (FEET PER SECOND)	WATER SURFACE DISCHARGE (CUBIC FEET PER SECOND)	WATER SURFACE FLOW (CUBIC FEET PER SECOND)	WATER SURFACE FLOW (CUBIC FEET PER SECOND)	WATER SURFACE FLOW (CUBIC FEET PER SECOND)
1960	10/1	10.0	100	1000	1.0	1000	1000	1000	1000
1960	10/2	10.5	100	1000	1.0	1000	1000	1000	1000
1960	10/3	11.0	100	1000	1.0	1000	1000	1000	1000
1960	10/4	11.5	100	1000	1.0	1000	1000	1000	1000
1960	10/5	12.0	100	1000	1.0	1000	1000	1000	1000
1960	10/6	12.5	100	1000	1.0	1000	1000	1000	1000
1960	10/7	13.0	100	1000	1.0	1000	1000	1000	1000
1960	10/8	13.5	100	1000	1.0	1000	1000	1000	1000
1960	10/9	14.0	100	1000	1.0	1000	1000	1000	1000
1960	10/10	14.5	100	1000	1.0	1000	1000	1000	1000
1960	10/11	15.0	100	1000	1.0	1000	1000	1000	1000
1960	10/12	15.5	100	1000	1.0	1000	1000	1000	1000
1960	10/13	16.0	100	1000	1.0	1000	1000	1000	1000
1960	10/14	16.5	100	1000	1.0	1000	1000	1000	1000
1960	10/15	17.0	100	1000	1.0	1000	1000	1000	1000
1960	10/16	17.5	100	1000	1.0	1000	1000	1000	1000
1960	10/17	18.0	100	1000	1.0	1000	1000	1000	1000
1960	10/18	18.5	100	1000	1.0	1000	1000	1000	1000
1960	10/19	19.0	100	1000	1.0	1000	1000	1000	1000
1960	10/20	19.5	100	1000	1.0	1000	1000	1000	1000
1960	10/21	20.0	100	1000	1.0	1000	1000	1000	1000
1960	10/22	20.5	100	1000	1.0	1000	1000	1000	1000
1960	10/23	21.0	100	1000	1.0	1000	1000	1000	1000
1960	10/24	21.5	100	1000	1.0	1000	1000	1000	1000
1960	10/25	22.0	100	1000	1.0	1000	1000	1000	1000
1960	10/26	22.5	100	1000	1.0	1000	1000	1000	1000
1960	10/27	23.0	100	1000	1.0	1000	1000	1000	1000
1960	10/28	23.5	100	1000	1.0	1000	1000	1000	1000
1960	10/29	24.0	100	1000	1.0	1000	1000	1000	1000
1960	10/30	24.5	100	1000	1.0	1000	1000	1000	1000
1960	10/31	25.0	100	1000	1.0	1000	1000	1000	1000
1960	11/1	25.5	100	1000	1.0	1000	1000	1000	1000
1960	11/2	26.0	100	1000	1.0	1000	1000	1000	1000
1960	11/3	26.5	100	1000	1.0	1000	1000	1000	1000
1960	11/4	27.0	100	1000	1.0	1000	1000	1000	1000
1960	11/5	27.5	100	1000	1.0	1000	1000	1000	1000
1960	11/6	28.0	100	1000	1.0	1000	1000	1000	1000
1960	11/7	28.5	100	1000	1.0	1000	1000	1000	1000
1960	11/8	29.0	100	1000	1.0	1000	1000	1000	1000
1960	11/9	29.5	100	1000	1.0	1000	1000	1000	1000
1960	11/10	30.0	100	1000	1.0	1000	1000	1000	1000
1960	11/11	30.5	100	1000	1.0	1000	1000	1000	1000
1960	11/12	31.0	100	1000	1.0	1000	1000	1000	1000
1960	11/13	31.5	100	1000	1.0	1000	1000	1000	1000
1960	11/14	32.0	100	1000	1.0	1000	1000	1000	1000
1960	11/15	32.5	100	1000	1.0	1000	1000	1000	1000
1960	11/16	33.0	100	1000	1.0	1000	1000	1000	1000
1960	11/17	33.5	100	1000	1.0	1000	1000	1000	1000
1960	11/18	34.0	100	1000	1.0	1000	1000	1000	1000
1960	11/19	34.5	100	1000	1.0	1000	1000	1000	1000
1960	11/20	35.0	100	1000	1.0	1000	1000	1000	1000
1960	11/21	35.5	100	1000	1.0	1000	1000	1000	1000
1960	11/22	36.0	100	1000	1.0	1000	1000	1000	1000
1960	11/23	36.5	100	1000	1.0	1000	1000	1000	1000
1960	11/24	37.0	100	1000	1.0	1000	1000	1000	1000
1960	11/25	37.5	100	1000	1.0	1000	1000	1000	1000
1960	11/26	38.0	100	1000	1.0	1000	1000	1000	1000
1960	11/27	38.5	100	1000	1.0	1000	1000	1000	1000
1960	11/28	39.0	100	1000	1.0	1000	1000	1000	1000
1960	11/29	39.5	100	1000	1.0	1000	1000	1000	1000
1960	11/30	40.0	100	1000	1.0	1000	1000	1000	1000
1960	12/1	40.5	100	1000	1.0	1000	1000	1000	1000
1960	12/2	41.0	100	1000	1.0	1000	1000	1000	1000
1960	12/3	41.5	100	1000	1.0	1000	1000	1000	1000
1960	12/4	42.0	100	1000	1.0	1000	1000	1000	1000
1960	12/5	42.5	100	1000	1.0	1000	1000	1000	1000
1960	12/6	43.0	100	1000	1.0	1000	1000	1000	1000
1960	12/7	43.5	100	1000	1.0	1000	1000	1000	1000
1960	12/8	44.0	100	1000	1.0	1000	1000	1000	1000
1960	12/9	44.5	100	1000	1.0	1000	1000	1000	1000
1960	12/10	45.0	100	1000	1.0	1000	1000	1000	1000
1960	12/11	45.5	100	1000	1.0	1000	1000	1000	1000
1960	12/12	46.0	100	1000	1.0	1000	1000	1000	1000
1960	12/13	46.5	100	1000	1.0	1000	1000	1000	1000
1960	12/14	47.0	100	1000	1.0	1000	1000	1000	1000
1960	12/15	47.5	100	1000	1.0	1000	1000	1000	1000
1960	12/16	48.0	100	1000	1.0	1000	1000	1000	1000
1960	12/17	48.5	100	1000	1.0	1000	1000	1000	1000
1960	12/18	49.0	100	1000	1.0	1000	1000	1000	1000
1960	12/19	49.5	100	1000	1.0	1000	1000	1000	1000
1960	12/20	50.0	100	1000	1.0	1000	1000	1000	1000
1960	12/21	50.5	100	1000	1.0	1000	1000	1000	1000
1960	12/22	51.0	100	1000	1.0	1000	1000	1000	1000
1960	12/23	51.5	100	1000	1.0	1000	1000	1000	1000
1960	12/24	52.0	100	1000	1.0	1000	1000	1000	1000
1960	12/25	52.5	100	1000	1.0	1000	1000	1000	1000
1960	12/26	53.0	100	1000	1.0	1000	1000	1000	1000
1960	12/27	53.5	100	1000	1.0	1000	1000	1000	1000
1960	12/28	54.0	100	1000	1.0	1000	1000	1000	1000
1960	12/29	54.5	100	1000	1.0	1000	1000	1000	1000
1960	12/30	55.0	100	1000	1.0	1000	1000	1000	1000
1960	12/31	55.5	100	1000	1.0	1000	1000	1000	1000

tween the mental age and the grade progress.

Taking the American mental age as standard for each grade, 44.9% of the Chinese children tested are found to be in the grade normal for their mental age, 29.2% of them are accelerated, and 25.6% are retarded as shown on table VII. Comparing this result with that of the Chinese children as in Table VII about 5% more than the American children are in the normal group, 10% more in the accelerated group and 14% less in the retarded group. It is obvious that the Chinese children who are old chronologically do show high mental age, and that these Children have not been retarded mentally, and that the retardation may be caused by a late start to school, and a failure to acquire the English language sufficiently to do class work effectively.

between the subject and the other persons
family and friends and the subject's
and the subject's, and of the subject's
and the subject's, and of the subject's
age, and of the subject's
family and friends and the subject's
and the subject's, and of the subject's
of more than the subject's
family and friends and the subject's
in the subject's, and of the subject's
children and the subject's
and the subject's, and of the subject's
mentally, and the subject's
a date about the subject's
English language, and the subject's

TABLE VII.

AMOUNT OF ACCELERATION AND RETARDATION IN THE
GRADES WHEN MENTAL AGE IS TAKEN FOR THE BASIS

Grade below M.A.		Normal grade for mental age					Grade above M.A.				
Nation.	Total	4yr	3yr	2yr	1yr		1yr	2yr	3yr	4yr	Total
Chinese	25.6		.9	5.5	19.2	44.9/23.8	3.6	.9	.9	.9	29.2
American	39.6	.5	1.9	10.2	27.2	40.6/15.6	3.2	.4	.1	.1	19.3

TABLE VIII.

AMOUNT OF ACCELERATION AND RETARDATION IN THE GRADES
WHEN CHRONOLOGICAL AGE IS TAKEN FOR THE BASIS.

GRADE ABOVE C.A. (Retarded)					NORMAL GRADE FOR C.A.		GRADE BELOW C.A. (Accelerated)				
NATION	Total	4yr	3yr	2yr	1yr		1yr	2yr	3yr	4yr	Total
Chinese	53.0	.9	1.8	12.8	38.5	25.0	16.5	3.6	.9		21.0
American	39.7	.6	2.4	8.8	27.9	44.3	14.3	1.4	.1		15.8

#Data from Terman: Stanford Revision of Binet-Simon Scale
pp. 111 and 114.

4. The occupation of the father of each subject, which was a part of the data obtained from each subject on the test blanks, was classified by Taussig's five-fold classification, as follows:

1. Very superior
2. Superior
3. Average
4. Inferior
5. Very inferior.

The first class includes professional men and business men and managers. The second includes those who do clerical work, and those who are engaged in small trade. The third consists of those who do skilled labor. The fourth, those who do semi-skilled labor like farming, gardening, etc. The last class includes day laborers. Using this classification by far the greatest number of the cases are in classes 3, 4, and 5. The chief occupations reported were laundry men and ranches who were working intensively on small fruit farms. Chart V represents a comparison of social status with intelligence quotient. A study of this chart will reveal in a general way that those who passed high in the test were found to have come from a good family with high social status, and those who showed low in the tests were generally belonging to low grade of social status.

Table IX shows in detail the percentage of subjects in each group. In about equal percentage of the



SOCIAL STATUS AND INTELLIGENCE QUO-
TIENT COMPARED.

Table IX.

Per cent of pupils in each group (Chinese)					
I.Q.	Below 80	80-89	90-109	110-119	120-Above
American	6.9	14.5	57.7	15	5.6
Chinese	8.1	22.9	56.0	6	7.0
Social Status	Inferior	Lower Av.	Average	High Av.	Superior
American	2	16.6	56.5	20.6	1.6
Chinese	24.9	21.0	25.8	18.3	10.0

Table X.

Median I.Q. of Each Group.					
Social Status	Inferior	Lower Av.	Aver.	High Av.	Superior
American	85	93	99.5	107	106
Chinese	89.3	95.6	95.6	101.7	115

#Terman, L.M. --- Stanford Revision of Biret-Simon Scale
pp. 88 and 89.

CHART V.

COMPARISON OF SOCIAL STATUS AND

I. Q.

I.Q.	60-	70-	80-	90-	100-	110-	120-	130-	140-	Tot.
Soc.Stat.	69	79	89	99	109	119	129	139	149	
1			1	2	2	1	3	1	1	11
2			4	5	6	3	2			20
3	1	1	6	9	8	2		1		28
4			7	8	8					23
5	1	6	7	10	3					27
Tota.l	2	7	25	34	27	6	5	2	1	109

Pearson's r .49

P. E. .049

subjects are found in each of the lower three ranks of the social classes. This comparison of the Intelligence Quotient and social status is very favorable to the Chinese children, a large number of them giving a higher Intelligence Quotient than their social status warrants. Application of the Pearson's formula to the data in Chart V gives a correlation of 49 with a P. E. .049, between social status and intelligence quotient.

Another way to express the relationship between Intelligence Quotient and Social status which may be a little more exact is to compare the median intelligence quotient for the children in each group. (see Table X) The median I. Q. is 115 for the very superior group, 102 for the superior, 96 for average, 96 for inferior and 89 for very inferior. The medians show a difference in each group except the average and inferior group, which are alike. It is significant that the median I. Q. of the very inferior is so far below that of the very superior. It is also obvious that the median I. Q. of the average group compares well with the median I. Q. of all classes.

Judging from this, the Stanford Revision of the Binet-Simon Scale does form a measure to differentiate the social status of the Chinese community.

5. Regarding sex differences one would naturally expect that there would show some differences in the tests in favor of the boy, because China has so long emphasized the education of the boys to the neglect of the girls. Such an expectation, however, is not borne out by the tests. On the contrary, the reverse results were obtained; in each age, the girls are a little superior to the boys. Table XI presents the data for both sexes of all ages. An observation of the table will reveal clearly the fact that girls are a little higher in the tests. The median Intelligence Quotient for the boys is 93.5 and that for the girls is 99.9. The correlation of the girls and boys in variability is high, according to Pearson's coefficient of variation it is .795.

This difference in ability of the two sexes is found in each age; and the more mature in chronological age the subjects are, the greater is the difference. Table XIII and XV show the variation respectively of sexes of the ages 9 to 12. A reference to table XIV reveals the fact that the two medians of both sexes of the 9 year-old children are quite near to each other. The ratio of variation is .736 which is smaller than that ratio of variation for all ages. The difference between the median for the sexes of 12 year old children, as shown in Table XV is far greater than for the two sexes of 9 year-old children, this difference being 7

TABLE XI

COMPARISON OF SEX DIFFERENCES IN

I.Q. OF 109 CHINESE CHILDREN

I.Q.	Boys		Girls	
	NO.	Per Cent	No.	Per Cent
56-65	0	0	0	0
66-75	4	6.4	1	2.1
76-85	15	24.2	5	10.6
86-95	16	25.8	10	21.3
96-105	16	25.8	21	44.7
106-115	7	11.4	6	12.7
116-125	1	1.6	2	4.2
126-135	3	4.8	1	2.2
136-145	0	0	1	2.2
Total	62	100.0	47	100.0
Median	93.5		99.9	

TABLE XII.

COMPARISON OF SEX DIFFERENCES OF CHINESE AND
AMERICAN CHILDREN.

INTELLIGENCE QUOTIENT									
Races	66- 75	76- 85	86- 95	96- 105	106- 115	116- 125	126- 135	136- 145	Med. Dif.
Chin. Boys	6.4	24.2	25.8	25.8	11.4	1.6	4.8	0	93.5
Amer. Boys	2.6	10.7	21.1	33.3	22.0	8.0	2.2	0	100.5 7
Chin. Girls	2.1	10.6	21.3	44.7	12.7	4.2	2.2	2.2	99.9
Amer. Girls	2.7	6.5	18.9	33.7	24.3	10.	2.4	1.1	102.6 3.0

(Ratio of girls to boys in variability is .795)

TABLE XIII.

DISTRIBUTION OF INTELLIGENCE QUOTIENT OF
BOTH SEXES OF 49 UNSELECTED CHINESE CHILD*
REN OF 9 YEAR-OLD

I. Q	BOYS	GIRLS
66 - 75	2	0
76 - 85	3	3
86 - 95	7	6
96 -105	12	13
106 -115	2	1
116 -125	0	0
126 -135	0	0
136 -145	0	0
Total	26	23
Median	97	98

TABLE XIV.

COMPARISON OF INTELLIGENCE QUOTIENT OF BOTH SEXES
OF CHINESE AND AMERICAN CHILDREN OF 9-10 YEAR-OLD.

		<u>INTELLIGENCE QUOTIENT</u>							
		75	86	96	106	116	126	136	
NATIONALITY	66-75	85	95	105	115	125	135	145	
Boys	7.7	11.5	27.0	45.8	7.7	0	0		
Chinese									
American	.0	6.5	20.	41.0	24.0	8	1		
Girls									
Chinese	.0	13.0	26.	56.5	4.4	0	0		
American	4	8.5	19.5	31.5	26.0	9	1	2	

Medians for American boys 101.8

Median for American girls 102

Data from Terman: Stanford Revision of Binet-Simon Scale



points. The ratio of variation is .905, thus indicating a wider variation for the girls and boys of the 12 year old group.

This slight superiority in favor of the girls is also found among the American children. According to Dr. Terman "a slight superiority of girls is found from ages 5 - 12 with the exception of 10, but the boys seem to supercede the girls at 14 years." Inspection of tables XII, XIII, and XIV which show the sex differences of Chinese children, reveals the same superiority for the girls of both races. It also shows that the Chinese girls are almost equal in mental development to the American girls, while the Chinese boys are little lower.

The reason for this universal though slight superiority of girls may be due to the early physical maturity of the girls, thus allowing the mental development a little earlier. Other reasons may be (as pointed out by Dr. Dickson) that the curriculum of the school is better adapted to the needs and interests of girls. (2) that the girls excel in industry and application (3) that girls are more willing to submit to directions in tasks, (4) that the better deportment of the girls would influence the result in more favorable marks for the girls; (5) that the teachers being mostly women are better suited to teaching girls than

1. Terman, L. M. Stanford Revision p. 77.



TABLE XVI

DISTRIBUTION OF I.Q OF 16 BOYS AND 17 GIRLS OF 12
YEAR - OLD.

I. Q	BOYS	GIRLS
66-75	2.	1.
76-85	3	2.
86-95	4	4.
96-105	4	6.
106-115	1	1.
116-125	0	1.
126-135	2	1.
136-145	<u>0</u>	<u>1.</u>
Total	16.	17.
Median	93.5	100.2.

TABLE XVI.

COMPARISON OF I.Q OF CHINESE AND AMERICAN CHILDREN OF
12 YEAR - OLD.

	66	76	86	96	106	116	126	135	Md.
BOYS	75	85	95	105	115	125	135	145	
Chinese	11.6	18.8	25	25	6.2	7.1	5.3	0	93.5
American	4.5	13.	24	28	20.	8.	3	0	99.2
<hr/>									
GIRLS									
Chinese	5.8	12.0	22.6	35.4	5.8	5.8	5.8	5.8	100.2
American	2.	3.0	17	32.	24.	125	2.	1.0	102.6

(Ratio of girls to boys invariability is .905)

TABLE XVII.

DISTRIBUTION OF INTELLIGENCE QUOTIENT OF 46
UNSELECTED CHINESE CHILDREN OF 9 - 10 YEAR-OLD

I.Q	NO. OF CASES	PERCENT
56 - 65	0	0
66 - 75	2	4.1
76 - 85	6	12.2
86 - 95	13	26.5
96 - 105	25	51.0
106 - 115	3	6.1
116 - 125	0	0
126 - 135	0	0
136 - 145	0	0
Total	49	100.0

Median at 97.4

TABLE XVIII.

COMPARISON OF THE DISTRIBUTION OF INTELLIGENCE QUOTIENT OF CHINESE AND AMERICAN CHILDREN OF 9 YEAR-OLD

RACE	<u>INTELLIGENCE QUOTIENT</u>								
	66 75	76 85	86 95	96 105	106 115	116 125	126 135	Md.	136 145
Chinese	4.1	12.2	26.0	51.0	6.2	0	0	97.4	
American	2	12	21.0	38.0	28.5	6	1	100.5	1

Data from Terman: Stanford Revision of Binet-Simon
Scale. p. 35.

boys.

However, apart from the slight superiority of the girls the distribution of intelligence shows no significant difference in the sexes. The data offer no support to the wide spread belief that girls group themselves more closely about the medians or that extremes of intelligence are more common among boys.

6. Because of the limitation of time at the authors disposal, it was hardly possible to test all the Chinese children in San Francisco. Hence only the children of two ages (9-10, 12-13) were tested, in order to obtain a general idea of the intelligence of unselected children in this group.

Table XVII shows the distribution of the intelligence quotients of the 9-10 year old children, a study of this table reveals the fact the I. Q ranges is from 66 to 115. Most of the children are of normal intelligence, being 96 - 105: 26.5% are of lower average intelligence ranging from 86 - 95; 12.0% 76 - 85: 6.1% of 106 - 115.

The distribution of intelligence quotients of 33 unselected children of 12 - 13 is shown on table XIX. The intelligence quotient ranges from 66 - 140. The children of average intelligence constitute 30.3%: those below 95 constitute 46.1% and those above 106 constitute 21.1%. A comparison with the children of 9 year old group show wider range of intelligence quotient for the 12 year old children. Thus we find that the children of 12 years old group differ more widely among themselves

CHART VI.

DISTRIBUTION OF MENTAL AGE AND GRADES OF 33
UNSELECTED CHINESE CHILDREN OF 12-13 YEAR-OLD.

M.A. GRADE	7	8	9	10	11	12	13	14	15	16	17	mds.
8										2	1	16.9
7							2	2				13.0
6				1		4				1		12.5
5		1	1	3	2	4	1					11.5
4		11	1	1	2							10.6
3				2								10.5
2	1											7.5
Total	1	2	2	7	4	8	5	2	0	3	1.	

CHART VII.

DISTRIBUTION OF MENTAL AGE AND GRADES OF 49
UNSELECTED CHINESE CHILDREN OF 9-10 YEAR-OLD.

M.A. GRADE	7	8	9	10	11	13	14	15	16	17	med.
8											
7											
6											
5											
4			3	1							9.6
3		1	10	1							9.5
2	4	13	11								8.5
1	4	1									7.6
Total	8	15	24	2							

in intelligence than do the children of the 9 year-old group.

A comparison with the American children of these two ages, as shown on table XVIII and XX show in both cases a little superiority in the upper range for the Americans. Apart from this the distribution of the I O of Chinese and Americans in a general way corresponds closely. The higher percentage in the average intelligence of the Chinese 9 year-old children may be explained by the fact of the difficulty of the language, especially for children of this age.

To show how the chinese children of the two ages are distributed in the grades the accompanying two charts VI and VII were prepared, showing the relation of mental age with grade progress.

Analyzing the results of the individual tests for the year 9-10 and for the year 12-13 we give on tables XXI and XXII, the percentages of the Chinese children passing these tests. A comparison with the American children passing brings out the following significant points.

1. In the tests involving time orientation, such as giving dates, the two races resemble each other closely.

2. The Chinese children show high in the tests depending on sensory discrimination. e.g. in the test of arranging weights; tests of arithmetic reason-

TABLE XIX.

DISTRIBUTION OF INTELLIGENCE QUOTIENT OF 33
UNSELECTED CHINESE CHILDREN OF 12-13 YEAR-OLD.

I. Q.	No. of cases	PERCENT.
56 -65	0	0
66 -75	2	6.1
76 -85	7	21.0
86 -95	7	21.0
96,105	10	30.3
106-115	2	6.1
116-125	1	3.0
126-135	3	9.0
136-145	1	3.0
	<hr/> 33	<hr/> 100.0

TABLE XX.

COMPARISON OF INTELLIGENCE QUOTIENT OF CHINESE
AND AMERICAN CHILDREN OF 2-13YEAR*OLD

<u>NATIONALITY</u>	<u>INTELLIGENCE QUOTIENT</u>							
	66 75	76 85	86 95	96 105	106 115	116 125	126 135	136 145 Md
Chinese	6.1	21.0	21.0	30.3	6.1	3.0	9.0	30 96
American	5.	15	20.0	28.0	19.5	11.	8.	0 98

Data from German: Stanford Revision of Binet-Simon Scalep.37

TABLE XXI

COMPARISON OF THE PERCENTAGE OF EACH TEST
PASSING BY THE CHINESE AND AMERICAN CHILDREN
of 9 to 10 YEAR-OLD

Name of tests	Chinese	American
1. Date	67.3	68
2. Weights	70.0	59
3. Change	77.5	57
4. Four Digits (rever)	57.1	64
5. Three Words	51.0	69
6. Rhymes	57.1	64

TABLE XXII.

COMPARISON OF THE PERCENTAGE OF EACH TEST
PASSING BY THE CHINESE AND AMERICAN CHILDREN
of 12-13 year-old.

Name of tests	Chinese	American
1. Abstract Words	52.4	59.0
2. Disarranged senten.	60.6	64.0
3. Fables	56.0	64.0
4. Five Digits	72.7	67.0
5. Picture interpreted	60.0	52.0
6. Similarities	54.5	60.0

The Vocabulary and Ball-field tests were omitted, because vocabulary test is not very fair for the Chinese, since it presupposes that the test be given in a native tongue; and the ball and field test is not very suitable, since they do not play ball very much.

ing e.g. in making change; and memory ig. in the test of reversing digits, and perceptive discrimination and logical interpretation, such as i n interpretation of pictures.

3. The Chinese children show up a little low in the tests involving abstract thinking such as abstract words, logical association such as three words test; and generalizations such as fable test.

This last peculiarity of the Chinese may be explained (1) by the fact that the Chinese old system of education has emphasized too much memory work, and neglected thinking and reasoning training. (2) That the Chinese children tested have language disability, for the tests involving abstract thinking and reasoning require a fair inderstanding of the language.

CONCLUSION

From this brief study, the writer is led to believe that the Stanford Revision and Extension of Binet-Simon Scale, gives a good measure of the intelligence of Chinese children. It differentiated social classes and it detected sex differences to a considerable extent. The results obtained in this experiment correlated positively to high degree with grade progress and to a fairly high degree with the teacher's estimates of ability and school work. A brief general summary of the chief facts disclosed by this experiment follows:

1. The results of this study show that the Chinese children possess a normal mental growth (see Graph IV) The general intelligence of these Chinese children shown in these tests very nearly equals that of the American children. The median intelligence quotient obtained for the Chinese is 97, and that secured by Dr. Terman for the American children is 99.

2. Correlations made between measures of intelligence levels and teacher's estimates of ability and school work are significant in that they show the positive relation that exists between them (Charts I. and II.) Other correlations show clearly the tendency for the pupils to classify themselves as to grade location by their mental capacity (Charts III and IV)

3. Children from different social classes of the Chinese community in San Francisco do not show

very marked distinction in mental ability. This, in the author's opinion, is due to the fact that the Chinese social organization had no strong class lines.

4. The Chinese girls are found to have a slight superiority over the boys. The ratio of girls to boys in variation is .795 for all ages. .736 for ages 9 to 10, and .905 for ages 12 to 13. Thus these ratios show that the girls and boys varied wider in intelligence in more mature age. (Tables XI, XIII and XV)

5. The intelligence of the 9 year old Chinese children is relatively uniform while that of 12 year-old children varies extensively.

6. When the results of each test are analyzed the Chinese children are found to test slightly higher in the tests containing arithmetical reasoning, sensory discrimination (test of arranging weights) and perceptive interpretation (test of picture interpretation) than do the American children. On the other hand the Chinese children are a little lower in the tests containing abstract thinking and reasoning.

This experiment, undoubtedly, gives further support to the statement that in general intelligence Chinese and American Children closely approximates one another.

60.
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A P P E N D I X

EDUCATION 57a - INTELLIGENCE TESTS

Instructions for Rating Pupils

1. Rate each pupil both on general intelligence and on quality of school work.

Record the intelligence rating on the slip after the letter I.

Record that for school work after the letter W.

2. Each rating is to be recorded merely by writing a figure from 1 to 7. The ratings are defined as follows:

1. Very superior
2. Superior
3. High average
4. Average
5. Low average
6. Inferior
7. Very inferior

3. When rating intelligence, compare pupil with the average child of same age.

4. When rating school work, compare pupil with average in same class.

5. Carefully avoid bunching the ratings too closely around 4, or "average."

Almost every class has one or more pupils who should be rated 1, and one or more who should be rated 7. This is true both for intelligence and school work. Make your ratings with discrimination, but do not study too long over any case.

6. Made your ratings without discussing the pupils with any other teacher.

7. Your ratings will be held confidential and used only for statistical purposes. Give each pupil exactly the rating you think he deserves.

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